Solar charge controller User manual

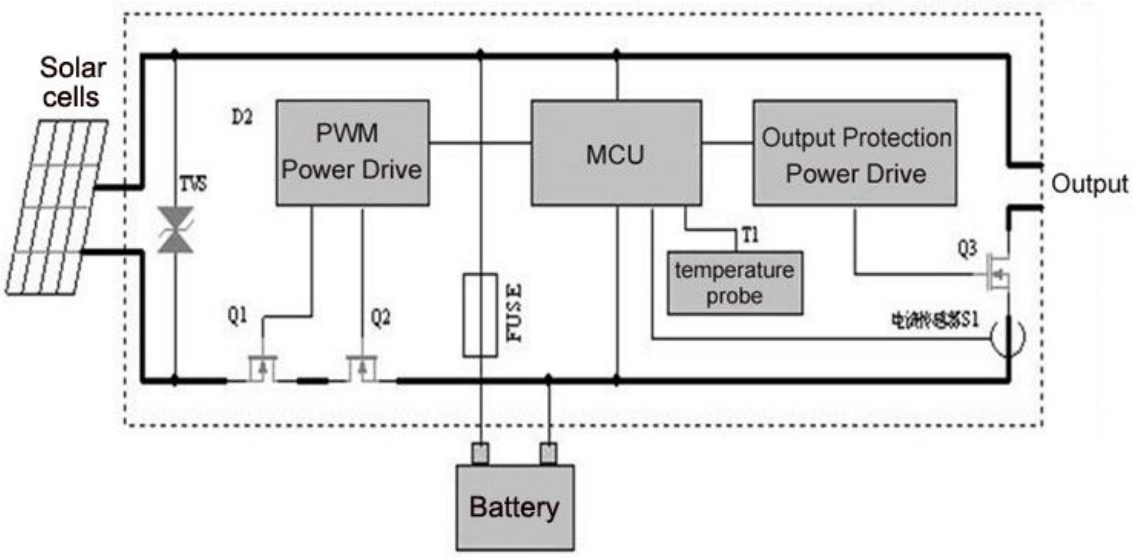
EPOW-Ksxx Series V1.9

Brand: MOBOLO

Product model: EPOW-KS10、EPOW-KS20、EPOW-KS10H、EPOW-KS20H

Product Description:

EPOW-KSxx This series of controllers for solar street lights, solar photovoltaic system design, the use of a dedicated MCU chip intelligent controller, the user interface is simple.Has a series of protective measures, such as: overcharge, over discharge, short circuit, overload, to prevent the opposite direction to connect the wires, can automatically restore to a working state. Intuitive charge and discharge status, battery status, load, working status and fault indication. Sampled by the smart chip on the battery voltage, discharge current and ambient temperature related to the parameters of the battery capacity, battery characteristics through a dedicated control of the model algorithm, discharge rate, temperature compensation correction efficient, high-accuracy control. High efficiency PWM charge mode, effectively reducing the battery plate curing, greatly extending battery life. Variety of light control switch, delay, half-power output mode in two time periods control, automatic identification of operating voltage, and satisfy customer a wide variety of application needs.



I Functional characteristics :

- Use of smart chips and proprietary control software-based expert systems, intelligent optimization of SOC control.。
- A variety of light control, light control + time delay, the half-power and two time periods separately control mode, and automatic voltage recognition feature, the maximum to meet the complex and changeable by the user application requirements。
- Three-level overload protection ,short-circuit protection,
- Have the charging, discharge, reverse connect protection function, repair the system in fault will be back to the work of the state, not causing damage to any component, will not burned the fuse
- Sampling the battery voltage, discharge current, temperature, etc. related to the parameters of the battery capacity, combined with a dedicated control algorithm to achieve the rate of discharge of the battery characteristics, high efficiency and high accuracy control of temperature compensation correction。
- Adopted PWM tandem charge control, the charging efficiency of 3% -6% increase in generating capacity, reduce heat, and greatly improve system reliability, extend battery life.
- Storage battery temperature compensation function.
- Characteristics of the battery discharge rate correction.
- Detailed report of the module, damage warning, charging quantity instructions, shows the battery storage state and load, all function by pressing a button, easy to use, the function is strong.
- Using industrial-grade chips,normal operation in the cold, hot, humid environment.
- With large diameter, interval greater connection pillars, can install 6 mm square wire, enhance the conductive insulating performance and reliability。
- SMT production process, gold-plated PCB, industrial-grade chips, advanced technology, quality assurance.

II Operation interface:

III Installation and use:

- Wire ready: suggest using more shares TongXin insulation wire, wire length decrease as far as possible (especially the connection between the battery and controller), reduce electric loss. Choose less than 4 A/square millimeter of current density of the cross-sectional area of the TongXin wires.
- To connect the controller battery terminals, then will the other end even to the battery, pay attention to the positive and negative. If the connection is correct, indicator light (2) light. Otherwise need to check the connection. If there is a reverse connect, will not burned fuse and damage the controller to any component.
- Connect the leads of the solar cells, first connect the controller of solar panels on the interface, again will also connects to the solar battery, please pay attention to the anode and cathode, the light is enough, charging indicator light is on. Otherwise need to check it right connection.
- Load connection, will be connected to the controller of the load output port, pay attention to the anode and cathode, some load is no reverse connect to answer the protection function.

IV Use instructions:

- Charging and overpressure instructions: when the system connection was correct, and sufficient sunlight, charge start, charging indicator light (1) for the green LED on. Battery batteries will be shut down after charging, and charging flicker; Charging process is using

PWM charging mode, if happened discharge, first you have to charge voltage ascension, and keep 10 minutes, and then down to fill continuously voltage, keep 10 minutes, activate the battery, avoid vulcanization crystallization, finally to float charging pressure, and keep the float charging pressure. If not happened discharge, won't appear ascension way of charging, prevent battery water loss. The automatic control process will make the battery charge efficiency and to ensure the best and to extend the service life of it.

- Battery state directions: the battery voltage in the normal range, the state indicator (2) as the green LED on; Battery full , for green LED flicker; When the battery power to half of the time, indicator for orange LEd on; When the battery voltage continue to reduce to owe pressure, for red LED on. At this time the system banned start load, but has begun will maintain load output, if the voltage further reduce to put voltage, red flicker, in order to protect the battery, controller will be forced to shut down output. When the battery voltage up to resuming voltage, will automatically output, status indicator light (2) into orange on. Note: in optical delay mode, a discharge and cut off because of the protection of load, in the evening is not restart load, avoid load appear flashing phenomenon.
- Load instructions: when load startup, the load indicator light (3) on. If the indicator light (3) for slow flicker, said output overload, load current more than 1.25 times of rated current controller or 1.5 times, overload protection start time were 10 seconds or 1 second controller will be forced to shut down output. When load appear when the fault controller will cut off output in the us in 8us, indicator light (3) rapid flicker. Protection is started, the controller delay after 30s will try to reconnect the load, if short circuit or overload troubleshooting later, start load output.

V Work mode Settings:

- Mode setting method: press light touch buttons for 3 seconds, mode display window after flicker, loosen the button, each as a convert a code, until the selected code that stop button, stop flicker in 5 seconds later, set to be automatically save, LED in 3 seconds out after, save electric energy.
- Light control mode: the night comes, light below the substrate, start signal controller in delay confirmation after 10 seconds, start load; Light control mode: the night comes, light below the substrate, start signal controller in delay confirmation after 10 seconds, start load; Light than high substrate, the output signal controller in close after 1 minute delay confirmation, close the output, load stop working

- Light control + delay mode:Start the process with reference to the light control mode, load startup, shut down automatically in work after period of time, save the energy consumption , reference model table set delay time.
- Light control mode + delay half power: (21-34) mode starting up process and a same, load startup it started the whole power output, and the work after a period of time is half the output power, to save electric energy. To delay time after the end, shut off the output.。
- Manual control mode: this mode of the load by the user manual control, but still got the overload and discharge control logic of the restrictions, start-up and shut down the load method is: mode LED to stop flicker, quick touch Settings button, open the control load switch.
- Debug mode: used for debugging systems use, canceled, day or night intelligent identification of light and other control mode is the same. Light is bright, closed at output load; No light, start load at output, installation debugging checked more convenient

VI、Work mode setting chart:

Mode code	Work mode	Mode code	Work mode
0	Light control switch	**21**	Delay off after 1 hour (0.5 hours at full power)
1	Light control switch + delay off after 1 hour	**22**	Delay off after 2 hours (1 hour at full power)
2	Light control switch + delay off after 2 hours	**23**	Delay off after 3 hours (1.5 hour at full power)
3	Light control switch + delay off after 3 hours	**24**	Delay off after 4 hours (2 hour at full power)
4	Light control switch + delay off after 4 hours	**25**	Delay off after 5 hours (2.5 hour at full power)
5-14	Light control switch + delay off after N hours	**26**	Delay off after 6hours (3 hour at full power)
15	PV power plant control system (photovoltaic mode)	**27**	Delay off after 7 hours (3.5 hour at full power)
16	Manual control mode	**28**	Delay off after 8hours (4 hour at full power)
17	Debug mode	**29**	Delay off after 9 hours (4.5 hour at full power)
20	Light control switch (half power output)	**30**	Delay off after 10 hours (5 hour at full power)
		31	Delay off after 11 hours (5 hour at full power)
		32	Delay off after 12 hours (5 hour at full power)
		33	Delay off after 13 hours (5 hour at full power)
		34	Light control switch (5 hours at full power)

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MODEL	EPOW-KS10H	EPOW-KS20H
Rated charge current	10A	20A
Rated load current	10A	20A
The system voltage	24V/12V AUTO；	
Overload, short circuit protection	1.25 times the rated current, the overload protection is 10 seconds , 1.5 times the rated current, the overload is 1 second greater than three times the rated current, 5us short-circuit protection,	
No-load loss	≤10 mA	
Charging loop pressure drop	Not greater than 0.15V	
Discharge circuit pressure drop	Not greater than0.06V	
Overpressure protection	17V，×2@24V；	
working Temperature	Industrial level：-35℃~ +55℃；	
Enhance the charging voltage	14.5V；×2@24V； (Maintenance time：30min) （Only when seen called when the discharge）	
Straight ChongChongDian	14.2V; ×2@24V； (Maintenance time:30min)	
Float charging voltage	13.7V; ×2/24V；(Maintenance time: To return to action until charging voltage)	
Charging to return to voltage	13.2v； ×2@24V；	
Temperature compensation	-5mv/℃/2V（Promotion, direct charge, float charge to return the voltage compensation）；	
Undervoltage voltage	11.2V； ×2@24V；	
Over-discharge voltage	10.5V- Discharge rate of initial discharge compensation fixed voltage (no-load voltage）； ×2@24V；	
Over-discharge voltage	11.8 V；×2@24V；	
Control mode	PWM pulse width modulation	

Note: the company reserves the right to change without prior notice.